

Time Log Seal

CROSS-REFERENCE TO RELATED APPLICATIONS

None. This application is a first application to Intellectual Property of Singapore for a Singapore Patent.

FIELD OF THE INVENTION

This invention relates to an electronic time logging device that logs down the time and date once it detect a voltage difference across its two terminal.

BACKGROUND OF THE INVENTION

Currently, many electrical and electronic products manufacturer offer a fixed period of warranty from the date of purchase or date of first use of the product. However, the accuracy of registration date of these warranties depends on how diligent the consumers register for the product warranty. Many time, the correct date of purchase or data of first use is a contest between consumers and manufacturer when it comes to product warranty claims.

The invention is an electronic device that connects to specific location vital to the operation of the electrical and electronic products. One such specific location may be the power input or output terminal. The connection is built along or within a breakable seal in either a close or open circuit. A constant potential difference is maintained across the terminal of the electronic device of invention. When the seal is broken, the circuit path is altered to open if it was initially close or close if it was initially open. This causes the electronic device to experience an abrupt change the potential difference across its terminal. This abrupt change triggers the device to log down the time and date at that instantaneous.

SUMMARY OF INVENTION

According to an exemplary aspect, there is provided an electronic time and date logger device, comprising of a printed circuit board assembly (PCBA) embedded with digital clock and calendar, a solid state non-volatile memory, a logic processor, and a component to hold energy or charges.

The PCBA is embedded with digital clock and calendar to provide the correct time and date. The PCBA has two terminals that are connected to the breakable seals installed over specific location vital to the operation of the electrical and electronic products. A potential difference is maintained across the two terminal of PCBA. The potential difference may be maintained by external source such as well cell battery. It can also be maintained by small mercury button cells.

When there is an abrupt change in the potential difference, caused by the broken seal, the logic processor will log down the time and date into the solid state non-volatile memory using the energy hold in the charge holding component. The charge holding component may include but not limited to a battery or capacitor. The recorded time and date can be later retrieved from the non-violate memory via direct cable connection onto the PCBA.

A circuitry path is embedded or built along the breakable seal, and connected back to the PCAB through wires or cables. The circuit can be either open or close. The abrupt change in potential difference is induced by when the seal is broken in order to start using the electronic or electrical product. The broken seal either closes the circuit if it was initially opened, or opens the circuit if it was initially closed. This will provide an undisputable record of time and date of the first use or purchase of the electronic or electrical product, depending on the time the seal is broken. With this undisputable records it will resolve many unnecessary dispute between consumers and manufacturer when it comes to warranty claims.

An example embodiment of the invention may be a time log seal for wet cell battery. The time of device has two wires or cables extended from each terminal of the PCBA. At one end of each of the wires or cables is the breakable seal cap. The seal cap has conductivity circuitry embedded on the inner wall of the seal cap. Partial of the circuit is exposed to provide contact to the wet cell battery terminal, as such the it can provide the external source of energy to maintain the potential difference across the PCBA of for the time log device.

BRIEF DESCRIPTION OF FIGURES

In order that the invention may be fully understood and readily put into practical effect there shall now be described by way of non-limitative example only exemplary embodiments of the present invention, the description being with reference to the accompanying illustrative drawings.

- Figure 1 Fully assembled view of an embodiment of the first embodiment of the electronic time log seal device.
- Figure 2 Module assembled view of breakable seal cap.
- Figure 3 Simplified schematic of the PCBA of the time log seal device.

DETAILED DESCRIPTION

An exemplary embodiment of the electronic time log seal device will be described with reference to Figure 1 to Figure 3 below.

As shown in Figure 1, the electronic time log device 100 comprise of two breakable seal caps 110, two flat wires or cables 120, and the main body 130 which house the printed circuit board assembly (PCBA) 310. The flat wire or cable 120 is integrated into the breakable seal cap 110 and in connected onto the PCBA 310 at the terminal pad 350 and 360.

In figure 2, a module assembled view of breakable seal cap 200. The breakable seal cap 110 has a tab 210 to ease end user to tear and break the breakable seal cap 110. On the breakable seal cap are perforated cut line 220 to aid easy breakage of the seal cap 110. An embedded electrical circuit 230 is installed in the inner wall of the seal cap 110, and the circuit 230 is extended to main body 130 via the flat cable 120. The flat cable is connected to the breakable cap 110 with conductive wire 240 in it. The electrical circuit 230 has exposed surface to be in physical contact with the terminal stud of the wet cell battery. When the seal cap 110 is broken, it will open the electrical circuit 230, thus cause an abrupt change in the potential difference across PCBA 310.

Figure 3, shows a simplified schematic 300 of the PCBA 310 of the time log seal device. The PCBA 310 has on it an integrated chip of digital clock and calendar 320 to report the real time and date. On the PCBA 310, there is an integrated chip of logic processor 330, which monitor the potential difference across the connector pad 360 and 370. These terminal pad 360 and 370 are to be connected to the flat wire 120. The potential difference across 360 and 370 is that been monitor by logic process 330. Whenever there is an abrupt change in the potential difference, the logic processor 330 will read the instantaneous time and date from clock and calendar 320. Following the logic processor 330 record it into the solid state non-volatile memory chip 340. On the PCBA 310, there include a reserve power component 350 that hold charge or energy for the last command of logic processor 330.

CLAIMS

The invention claims are:

1. An electronic time log seal device of the claim that records the time and date instantaneously into a non-volatile memory chip at the instant a potential difference under constant monitor has an abrupt change.
2. An electronic time log seal device of the claim that monitors for an abrupt change in the potential difference across or along the physical seal attached to specific location of electronic or electrical product, to register time and date of its first use or purchase.
3. An electronic time log seal device of the claim that records the time and date of product first use or purchase into a solid state non-volatile memory, which can retrieve later for verification.
4. An electronic time log seal device of the claim that can monitor potential difference across or along seal, is powered by external electricity supply or by build in battery into the device of claim.
5. An electronic time log seal device of the claim includes a breakable seal which has embedded closed circuit, but turns open when the seal is broken to record instantaneous time and date of the first use of product or purchase.
6. An electronic time log seal device of the claim includes a breakable seal which has embedded opened circuit, but turns open when the seal is broken to record instantaneous time and date of the first use of product or purchase.